STATEWIDE INFORMATION TECHNOLOGY ARCHITECTURE PAPER

Architecture Paper: Common Requirements Vision

Effective Date: April 16, 2007

Approved: Richard B. Clark

Replaces & Supercedes: None

I. Purpose

The purpose of this Common Requirements Vision document is to define the basis which subsequent components of the Information Technology Services Division's Enterprise Architecture will be based.

II. Definition(s)

Refer to the Statewide Information Technology Policies and Standards Glossary for a complete list of definitions.

III. Closing

For questions or change requests on this architecture paper, please e-mail ITpolicy@mt.gov.

Or, you may contact the Information Technology Services Division at:

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IV. Cross-Reference Guide

A. Architecture Documents

- US Department of Interior Common Requirements Vision

V. Administrative Use

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State of Montana

ITSD ENTERPRISE ARCHITECTURE

Common Requirements Vision

April 2007

Office of the Chief Information Officer
Department of Administration
Information Technology Services Division

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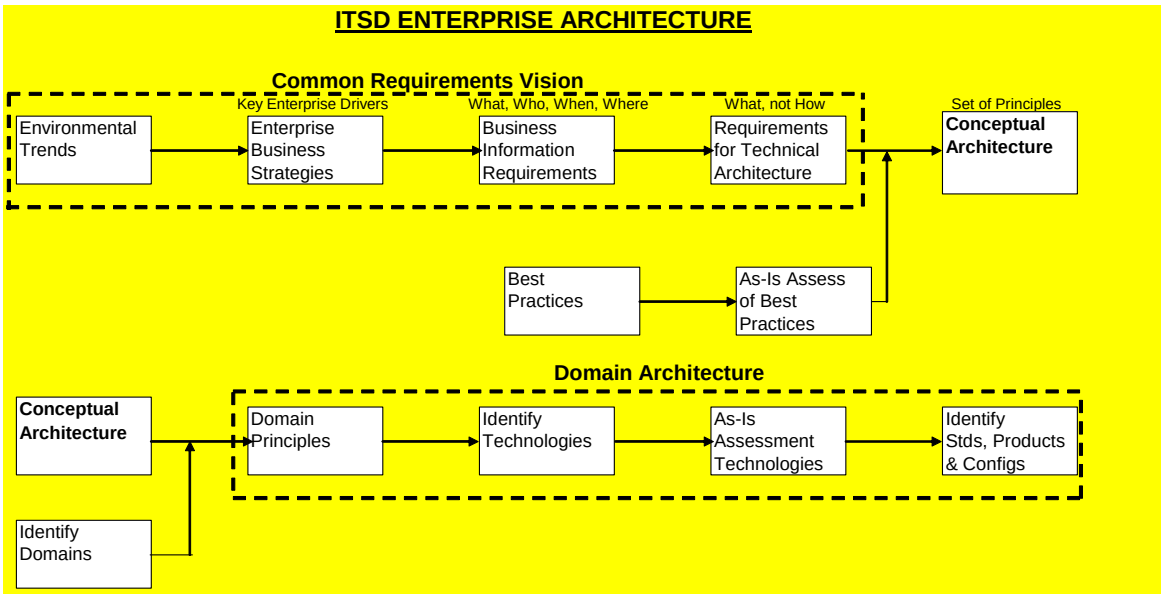
I. Introduction and Background

The Montana Information Technology Act requires that the Department of Administration be responsible for carrying out the planning and program responsibilities for information technology for state government. To meet this requirement the Chief Information Officer (CIO) is creating an Information Technology Services Division (ITSD) Enterprise Architecture (EA). An enterprise architecture is an integrated framework and governance process for managing and evolving IT while meeting strategic and information resource management goals.

To be successful, the architecture must be derived from business requirements and be understood and supported by IT senior management. Information technology does not exist for its own purposes; rather it exists to support the needs of business users. Accordingly, the first major piece of the architecture process is the Common Requirements Vision (CRV). This vision document is used to ensure that ITSD's Information Technology (IT) products and services are aligned with the strategic direction of ITSD. It is also the necessary predecessor for the creation of the Conceptual Architecture Principles (CAP), which will be a logically consistent set of principles that are derived from these business requirements and will be used to guide the engineering of the information systems and technology infrastructure. In essence, the architecture is the foundation necessary for the successful growth and development of technology within ITSD.

Below is a simplified graphic of the process used to create the CRV, the CAP, and eventually the full ITSD EA.



II. Environmental Trends

The first step for the architecture team was to identify influencing environmental trends; that is the major internal and external forces (e.g., policies, regulatory changes) and the important technological trends that can impact ITSD's business and program strategies. This information came from a combination of sources: DOA/ITSD Agency IT plan, interviews with ITSD management, and research from various Federal and State entities. The team then reduced these to common or shared trends. For ease of review, these trends have been grouped together by focus. These are: Policy, Customer, ITSD Organization, and Technology.

A. Policy focus

ET-1) Increasing legislative pressure and administrative requirements for inter-government systems interoperability and coordination with the end goal being unobstructed information.

ET-2) Increasing focus on strategic planning, performance measurements, and budget alignment by the Legislature (e.g., Montana Information Technology Act (MITA)).

ET-3) Increasing need for legislative clarity around the politics of public sector information - charging for services, information sharing, privacy, and equal access - because of impediments current laws bring to e-Government. Data and information from the private and commercial sector have privacy and proprietary issues; legislation needs to be forthcoming that balances these issues with the public's right to information.

ET-4) Growing use of comprehensive packaged solutions by government organizations because resulting systems are integrated and facilitate business process improvements.

ET-5) Increasing legislative, regulatory pressure and administrative requirements for inter-government systems security to ensure the confidentiality, integrity, availability and trust of information.

B. Customer focus

ET-6) Growing use of e-Government services provided via a single point of entry that increasingly cuts across agency boundaries.

ET-7) Increasing need to assure the public's trust in the services and activities of government organizations as use of automation increases.

ET-8) Increasing demand by the public for easy electronic access to many routine state government services.

ET-9) Increasing demand by the public for access to ITSD hosted information.

C. ITSD Organization focus

ET-10) Increasing workload with decreasing number of skilled workers available for IT positions.

ET-11) Increased need for quick, easy and secure sharing of information with multiple organizations (i.e., Federal, state, local and tribal governments, private organizations & business) collaborating on common goals.

ET-12) Evolution toward a mobile workforce with secure access to organization-wide information resources.

ET-13) Increasing awareness of information as an asset.

D. Technology focus

ET-14) Increasing need for faster, flexible, secure access to information by ITSD personnel to improve service delivery, worker productivity, and management of resources.

ET-15) Increasing demand for the capture, electronic storage, delivery, and archiving of State resources (including those that are currently paper-based).

ET-16) Growing gap between the cycles of technology evolution and the planning, budgeting and procurement cycle within state government (e.g., acquisitions are often obsolete before deployment).

ET-17) Move towards making security transparent to end users.

III. Business Strategies

The architecture team then identified the business responses to these major environmental trends. This information came from a review of the department IT plan and interviews with ITSD management. These strategies represent how the organization will effectively address the shared environmental trends. Like the environmental trends, these strategies have been grouped by focus for ease of analysis.

A. Policy focus

BS-1) Promote and advance the objectives of the Montana Information Technology Act

BS-2) Improve the financial health, stability and accountability of ITSD.

BS-3) Improve the security of the State's IT infrastructure and information.

BS-4) Comply with and implement State and Federal mandates.

B. Customer focus

BS-5) Utilize and implement e-Government (eGov).

BS-6) Provide a standardized interface for ITSD hosted information and services.

BS-7) Provide effective and efficient enterprise services that focus on customer requirements.

BS-8) Provide highly available enterprise IT services.

BS-9) Continuously improve customer relations.

C. ITSD Organization focus

BS-10) Pursue generally accepted best practices.

BS-11) Utilize appropriate technologies to support management objectives.

BS-12) Explore and utilize methodologies to help satisfy and expand training options.

BS-13) Improve access to technical assistance and management tools.

BS-14) Provide an integrated information (ITSD-wide) architecture process and structure that directly supports ITSD's mission and business information management requirements.

D. Technology focus

BS-15) Improve information management systems.

BS-16) Encourage innovation in our IT infrastructure, products and services.

BS-17) Utilize technology that makes security transparent to end users.

BS-18) Develop reusable, consistent, and sharable components for the ITSD Enterprise Architecture.

IV. Business Drivers

Once the environmental trends and business strategies had been determined, the architecture team then developed the *business change drivers*. Each Business Driver is a "theme" that represents a related set of environmental trends and business strategies. These become the IT and business objectives or activities that must be accomplished and done well.

BD-1) Leverage the Internet to support ITSD's business, as appropriate.

BD-2) Provide easy, reliable, and secure access to appropriate information and services for all interested parties. Assure that the information is complete, timely and accurate.

BD-3) Provide sound stewardship/oversight of mission related programs and associated resources to ensure accountability for ITSD performance.

BD-4) Utilize ITSD, contractor personnel and workplace options to address current and future needs for skilled employees.

BD-5) Provide for increased sharing of information and computer applications/systems for efficiency and effectiveness.

BD-6) Provide for increased partnerships with the private sector, universities, tribes, non-profits, and other government organizations.

BD-7) Significantly improve the IT procurement process, computer systems development, implementation, and application roll out processes.

BD-8) Improve critical business processes to make them faster, more reliable, scalable, and cost-effective while improving the quality of services that customers receive.

BD-9) Provide policy makers and senior managers with quality and essential information for decision-making.

BD-10) Incorporate enterprise architecture approaches that are scalable and logically fit ITSD's needs.

V. Business Information Requirements

The architecture team then identified the information required by the business decision-makers and activities needed to satisfy the *business change drivers*:

- **WHAT** information is needed?
- **WHO** needs it?
- **WHEN** (how often) is it needed?
- **WHERE** does it come from?

BIR-1) Provide anytime, anywhere access to all appropriate ITSD systems, information and services, as soon as practical.

BIR-2) ITSD will use multiple technologies to publish the rules and guidelines for the disclosure of ITSD information to interested parties.

BIR-3) Provide secure and electronic access to systems and information shared with other Federal, State, or local partners.

BIR-4) Design and build applications that use web technology, when appropriate, to make services more accessible and easier to use.

BIR-5) Enable the consolidation, maintenance, and identification of business related information about parties with whom ITSD conducts business.

BIR-6) Provide an easily accessible directory of available information across ITSD.

BIR-7) Use the Internet to facilitate the acquisition of goods and services and property disposal.

BIR-8) Provide a single, secure login to authorize access to appropriate ITSD information and services.

BIR-9) Provide an easy and consistent user experience in accessing systems and information through multiple technologies.

BIR-10) Provide common information in consistent ways.

BIR-11) Provide program-monitoring information to staff to assess progress in carrying out legislative intent, meeting established performance goals and targets, and to properly measure program performance.

BIR-12) Provide management with necessary resource & demand information to enable timely, flexible, and accurate workforce decisions from internal and external resources.

BIR-13) Provide ITSD-wide skills inventory information to management.

BIR-14) Provide electronic means as an option for training of existing staff.

BIR-15) Provide a means to make ITSD resources and information available to support work when outside of the office.

BIR-16) Provide for electronic identification and authorization.

BIR-17) Provide the means to automate the monitoring and modeling of business/program processes and the information used by those processes.

BIR-18) Provide the ability to utilize common business processes across ITSD.

BIR-19) Provide for substantial increases in quantity and demand for data.

BIR-20) Provide the means to determine and analyze the IT impact of legislative and regulatory requirements.

BIR-21) Provide means of sharing information across organizational boundaries, both internal and external.

BIR-22) Provide for increased use of structured workflow.

BIR-23) Ensure that information is made available while securing ITSD assets and personal privacy.

BIR-24) Provide for increasing IT infrastructure capacity requirements and the need for continual monitoring.

VI. Requirements for Technical Architecture

The final step in the Common Requirements Vision portion of the process is to translate the business information requirements into requirements for technical architecture; that is:

- **WHAT** is required of the technical architecture to support the business information requirements,
- **NOT HOW** the requirements will be satisfied.

These architecture requirements begin transitioning the plan from a "business (program) context" to an "IT (technical) context." These requirements, along with the Conceptual Architecture, will provide guidance to the technical communities as they establish standards, policies, etc., that will guide their technical domains as expressed in their Technical Reference Models (TRMs). The ITSD EA will:

RTA-1) Support a shared data, information, and records infrastructure environment that provides flexible access to a consolidated data source. Data will be defined by standard definitions stored in a common repository and will be maintained by clearly identified data stewards.

RTA-2) Provide strategies for integrating shared data representation, transformation, validation, querying, and administration.

RTA-3) Enable secure access by interested parties, from multiple locations, via multiple methods and media, to appropriate information.

RTA-4) Provide common application and data interoperability mechanisms to facilitate process interoperability and information exchange.

RTA-5) Support the development or acquisition of a repository for housing shareable services.

RTA-6) Provide standard technology interfaces that are easily understood and provide consistent access, look and feel to the underlying service.

RTA-7) Provide re-usable service patterns and service components; monitor their ROI through a relevant unit of measure.

RTA-8) Enable the ability to provide around-the-clock critical business operations and systems management capabilities.

RTA-9) Enable the ability to support, capture, store, and display the interested parties interactions and the preferred method(s) of interaction with ITSD and its partners.

RTA-10) Provide a means to deliver interactive training.

RTA-11) Provide support for major increases in demand for productive (collaborative) teamwork including emails, file transfers, video/audio links, teleconferencing, work flow processes etc.

RTA-12) Provide secure access to all computing and information resources for employees.

RTA-13) Enable IT integration facilitated through a standardized infrastructure including; existing identification, routing, connectivity, and access control functions of our computing environment.

RTA-14) Support modular and adaptive solutions, whether leased, purchased or developed internally.

RTA-15) Provide a service-oriented integration platform based on an adaptable, flexible architectural framework.

RTA-16) Develop a business-driven, solutions-focused enterprise architecture, establishing a business and technology blueprint and standards framework.

RTA-17) Provide ITSD-wide systems that support the creation, tracking, capture in a record keeping system, storage, publication, retrieval, and disposition of documents, images, and other information rich objects that are used within business processes.

RTA-18) Provide comprehensive information technology security and privacy mechanisms to ensure compliance with contractual, regulatory, and other information requirements.

RTA-19) Provide the ability to collect, model, and analyze ITSD's internal and external information for decision-making and accountability.

RTA-20) Enable an increase in the types and quantity of business metrics collected, monitored, and analyzed for use by management.

A. Example of How Requirements for Technical Architecture Map to Environmental Trends

As an example of how Requirements for Technical Architecture result from a logical process driven by business needs, the following illustration is offered:

- ***Requirement for Technical Architecture #1 (RTA-1)*** states "The ITSD EA will support a shared data, information, and records infrastructure environment that provides flexible access to a consolidated data source. Data will be defined by standard definitions stored in a common repository and will be maintained by clearly identified data stewards." This specific RTA statement was derived from multiple business information requirements, such as
- ***Business Information Requirement # 21 (BIR-21)*** that states "Provide means of sharing information across organizational boundaries, both internal and external." The business information requirements were derived from multiple business drivers, such as
- ***Business Driver # 9 (BD-9)*** that states "Provide policy makers and senior managers with quality and essential information for decision-making." The business drivers were derived from business strategies, such as
- ***Business Strategy # 15 (BS-15)*** that states "Improve information management systems." The business strategies are responses to environmental trends, such as
- ***Environmental Trend # 14 (ET-14)*** that states there is an "Increasing need for faster, flexible, secure access to information by ITSD personnel to improve service delivery, worker productivity, and management of resources."

The above illustration is for the purpose of showing how trends and strategies that influence the business of ITSD will ultimately guide the development of a technical architecture, known as the ITSD Enterprise Architecture. Implementation of the ITSD EA will enable a greater degree of interoperability and a reduction in duplicate data, computer systems, and supporting technology.

VII. Value of the Common Requirements Vision

The CRV is the foundation upon which subsequent components of the ITSD EA will be based. It is the touchstone. Each of the sections of the CRV (Environmental Trends, Business Strategies, Business Drivers, Business Information Requirements, and Requirements for Technical Architecture) will be used to support decisions on appropriate IT investments for ITSD and provide verifiable linkages to business needs.

The ITSD EA is ITSD's response not only to MITA but also to the intensifying business need to deliver quality, cost-effective IT that enables ITSD to effectively accomplish its mission.

Business Drivers, Business Information Requirements, and Requirements for Technical Architecture were derived from environmental trends and strategies, and ***should be understood and used as logical recommendations but not as absolutes***. Management will always retain the control and responsibility for selecting appropriate technology solutions dependent upon priorities and resource availability. However, the ITSD EA will be the primary foundation upon which IT decisions are made and justified -- both within ITSD and to oversight organizations.